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Kieffer et al.

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(54) **ACCESSORY CART FOR STRIPING PAVEMENT AND OTHER SURFACES**

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(51) **Int. Cl.**
B62B 3/02 (2006.01)

(52) **U.S. Cl.** **280/47.34**; 280/47.371; 239/150

(58) **Field of Classification Search** 280/47.34, 280/47.11, 47.371, 47.36, 47.17, 62, 47.18, 280/47.2; 239/150, 147, 172, 754; 404/93, 404/94
See application file for complete search history.

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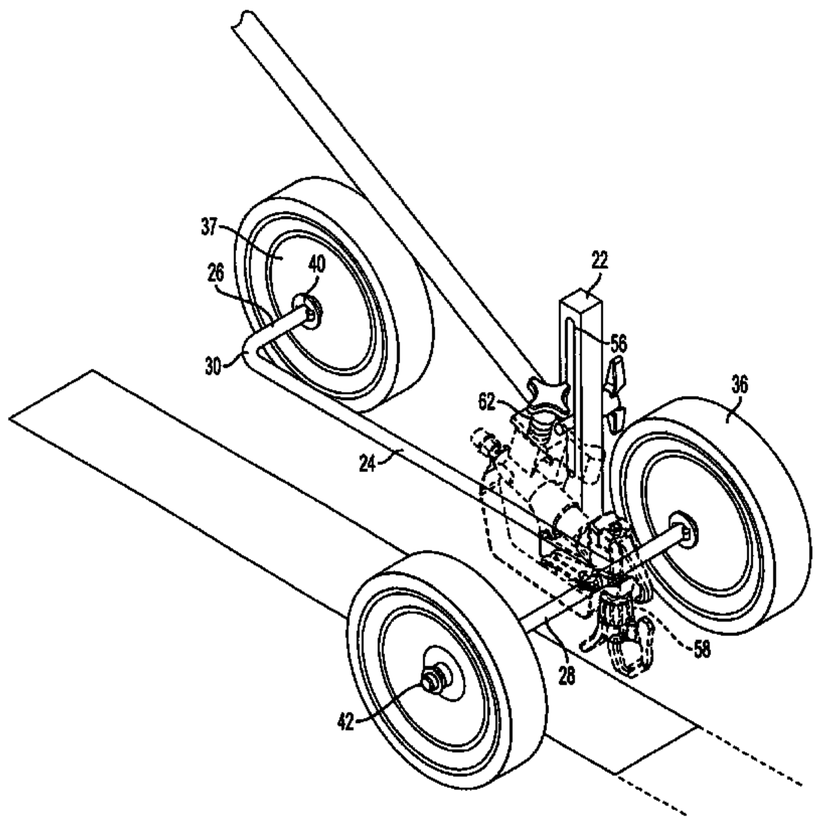
(57) **ABSTRACT**

An accessory cart having a J-shaped frame for removable mounting of a spray gun to convert a conventional airless paint sprayer into a line striper to paint lines on parking lots, curbs, warehouse floors and other pavement surfaces, and which can alternately be used in conjunction with a traditional line striper in cramped spaces or between parked cars, and which is easily converted from a 3-wheeled device to a 2-wheeled device for painting curved lines, and which permits adjustable positioning of the spray gun at a desired location on the cart to optimize the spray pattern in a particular application.

28 Claims, 10 Drawing Sheets



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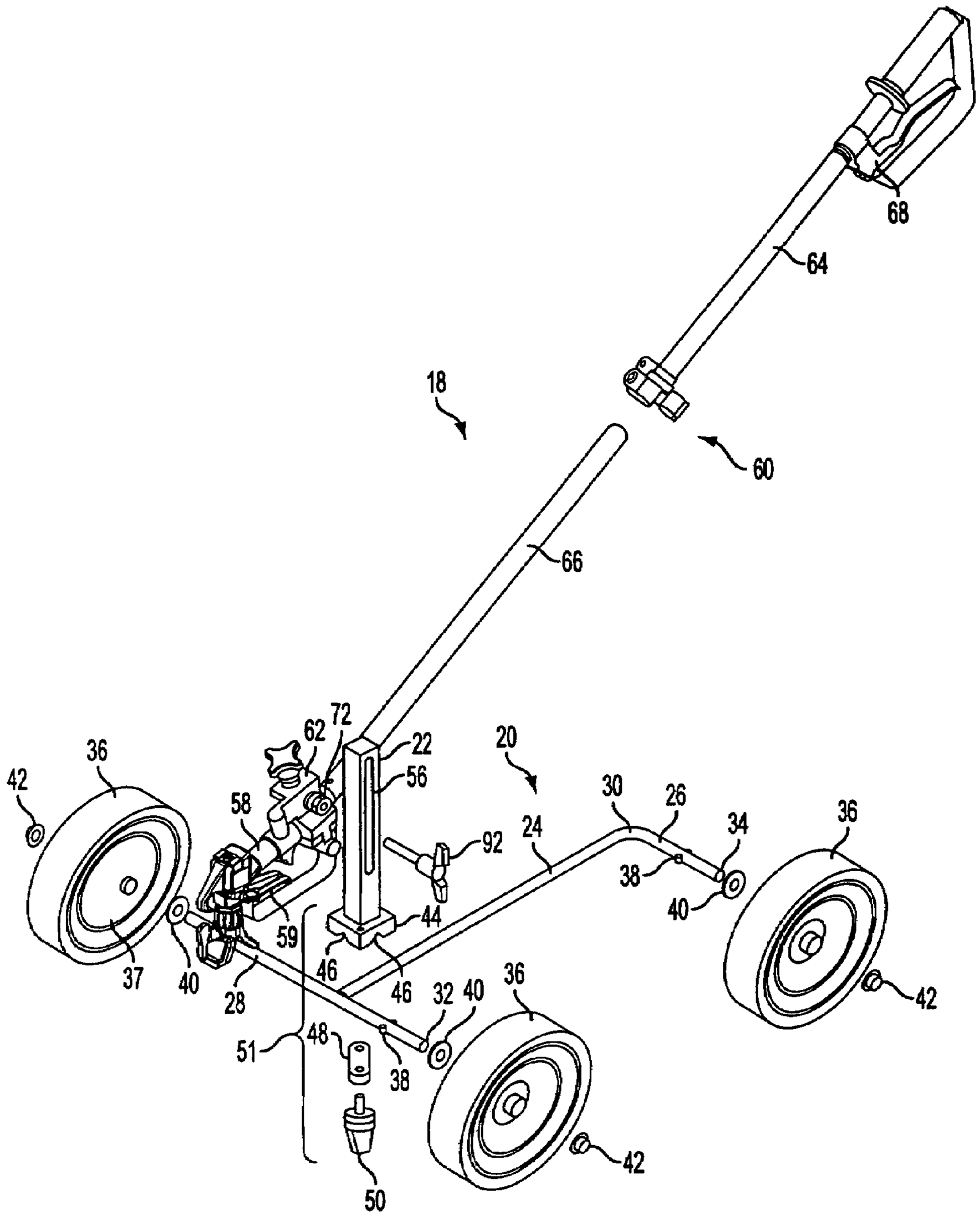
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FIG. 1

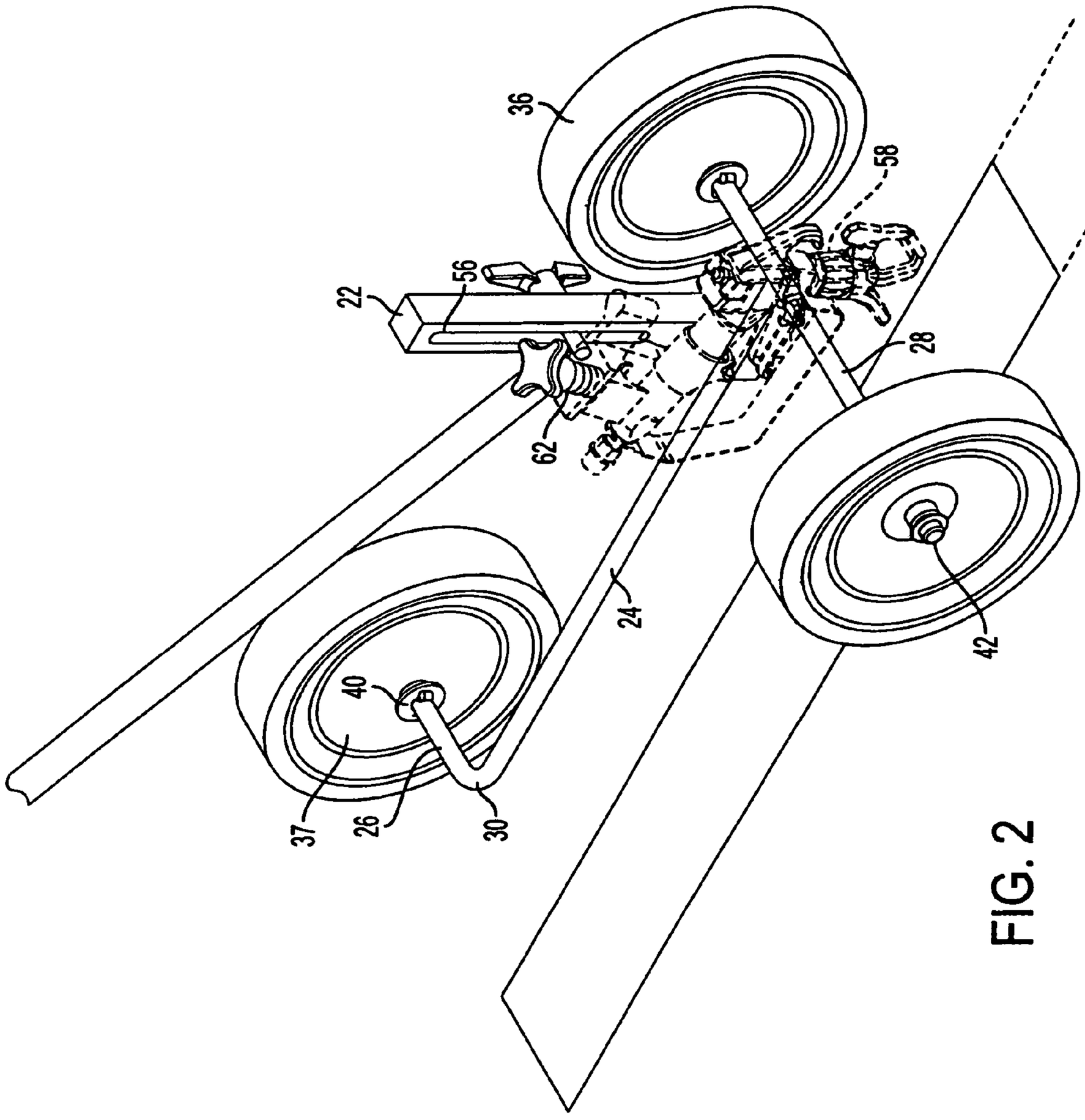

FIG. 2

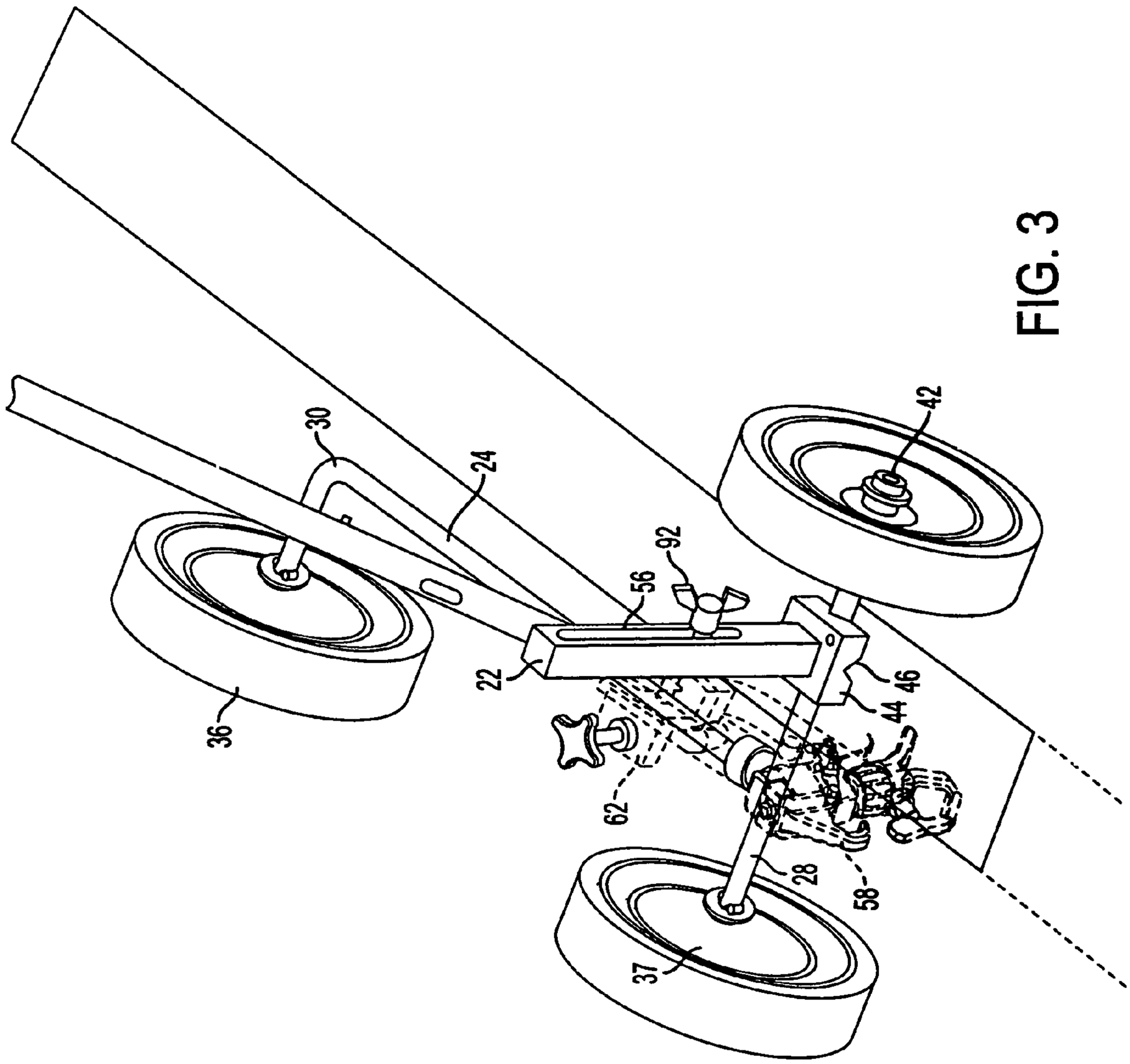

FIG. 3

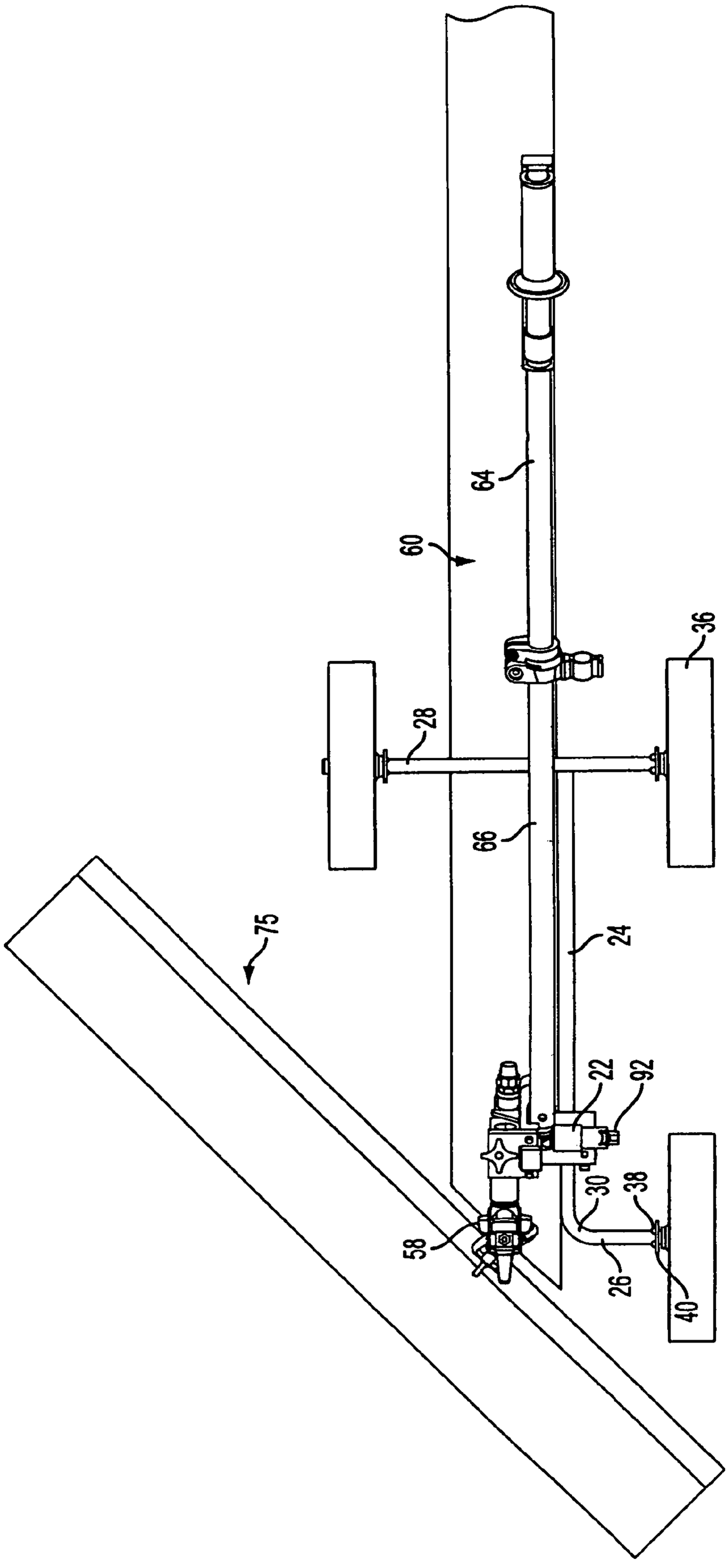

FIG. 4

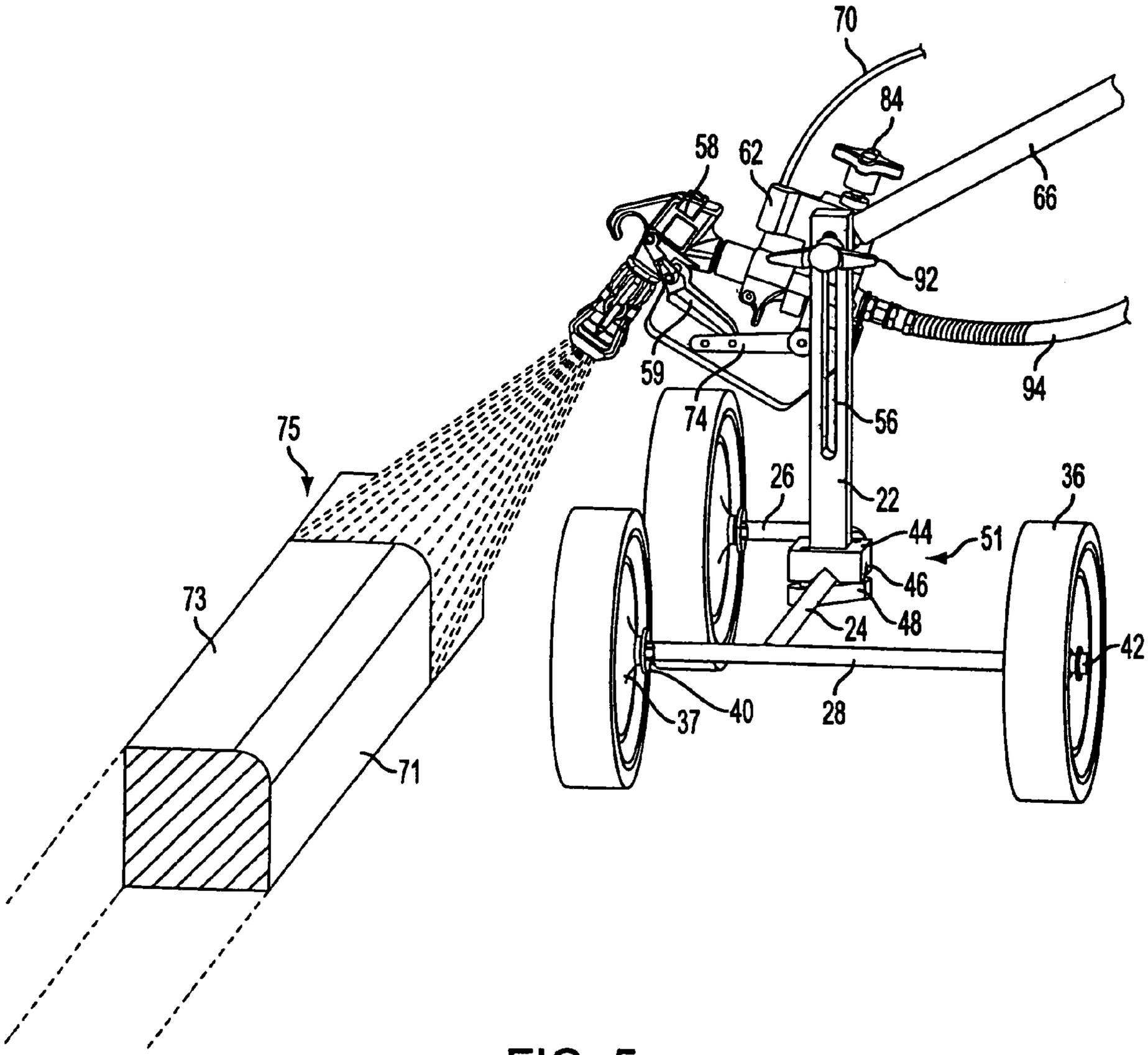
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FIG. 5

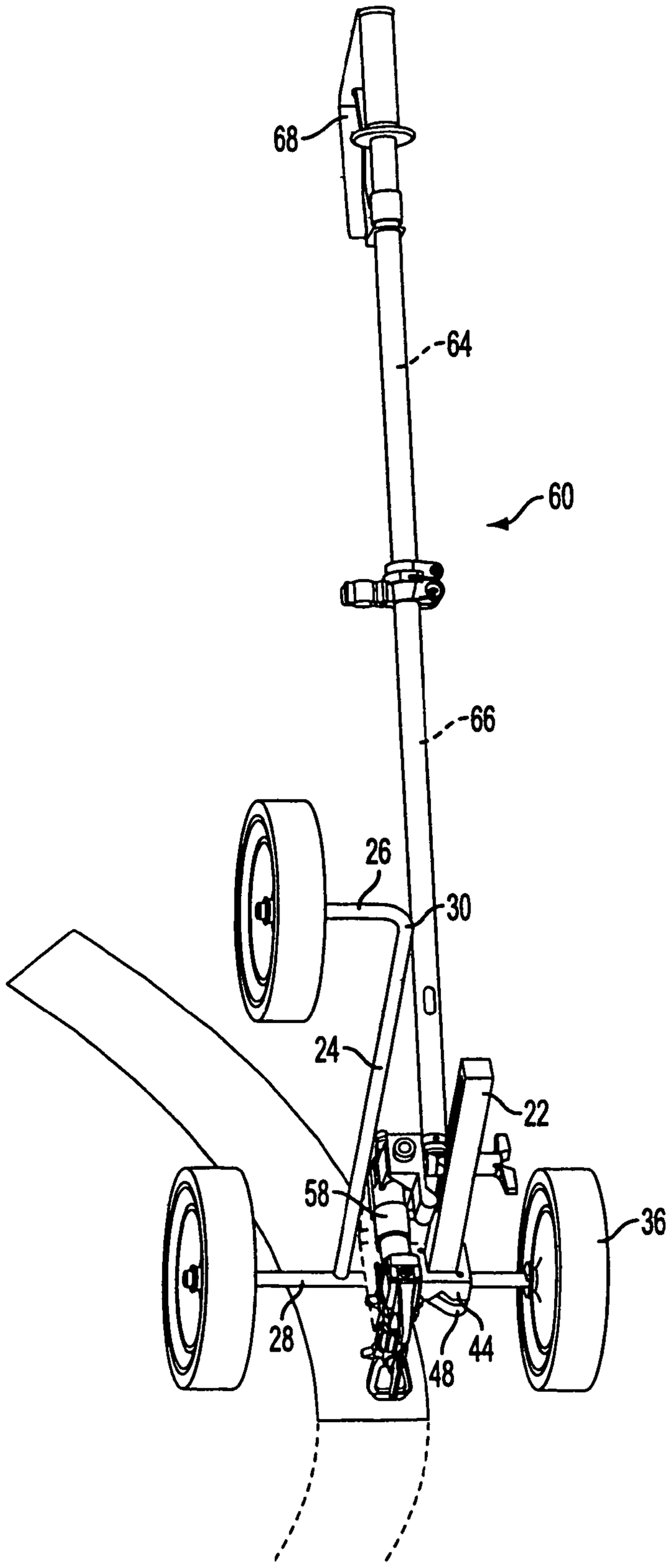

FIG. 6

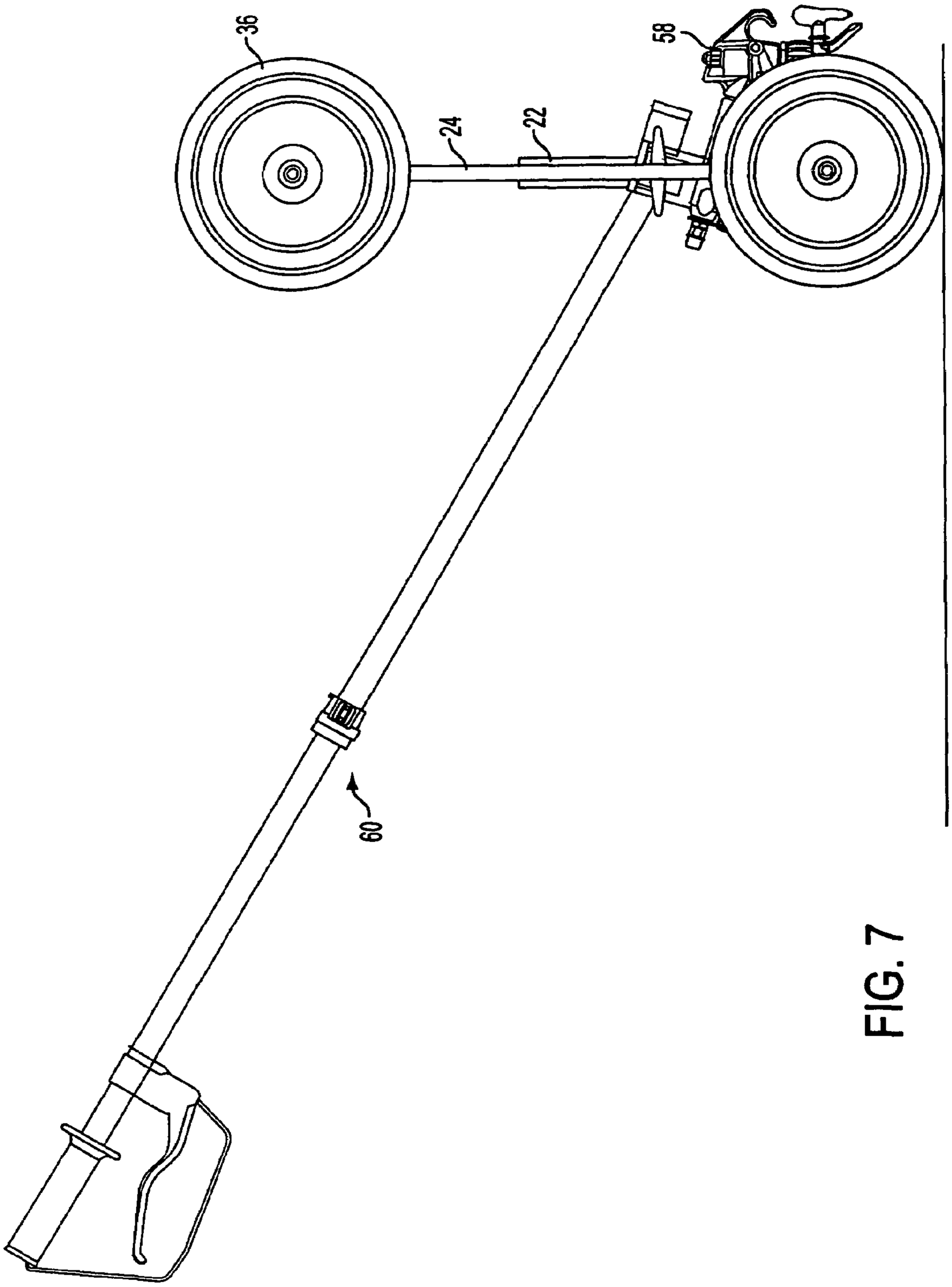

FIG. 7

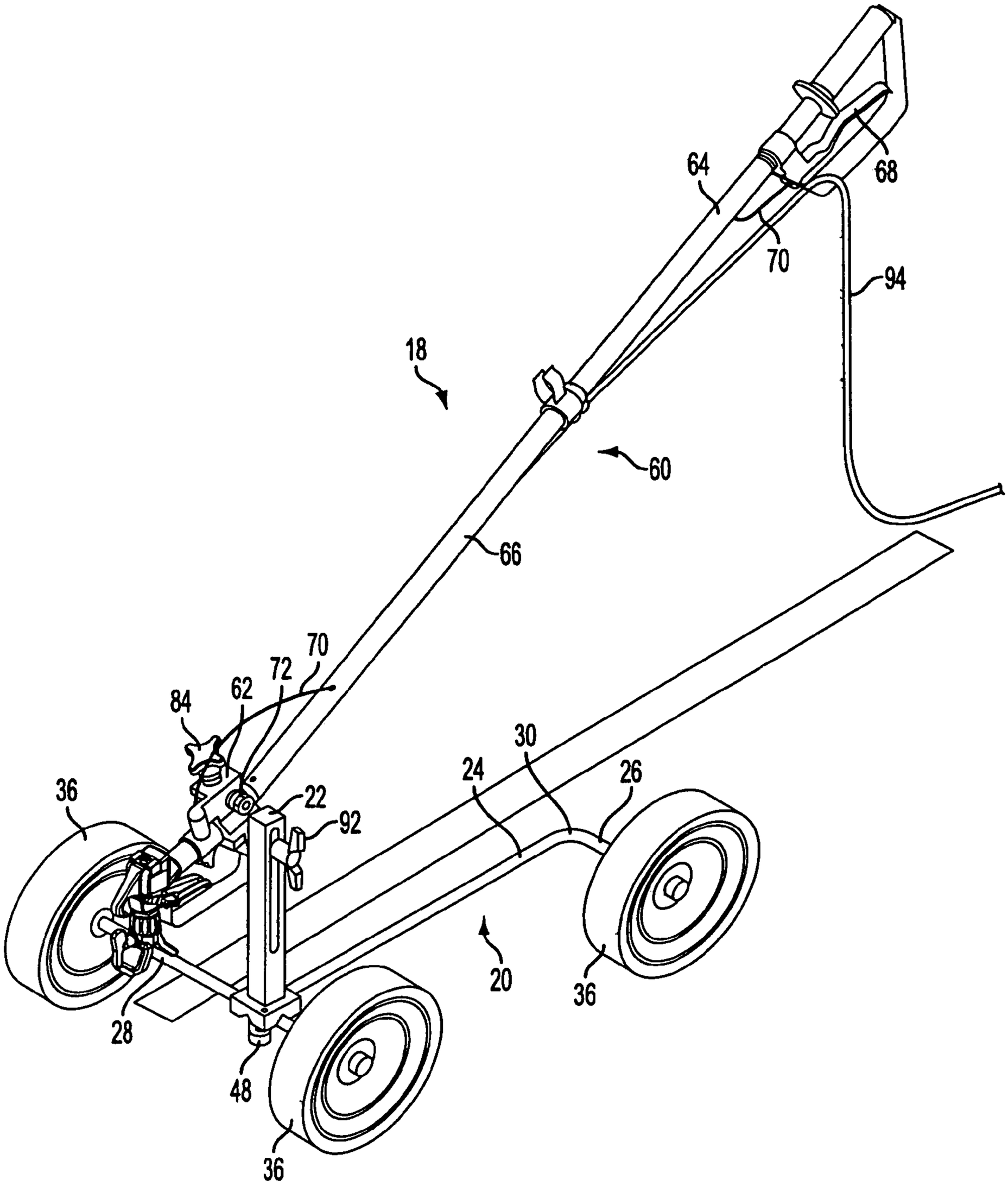

FIG. 8

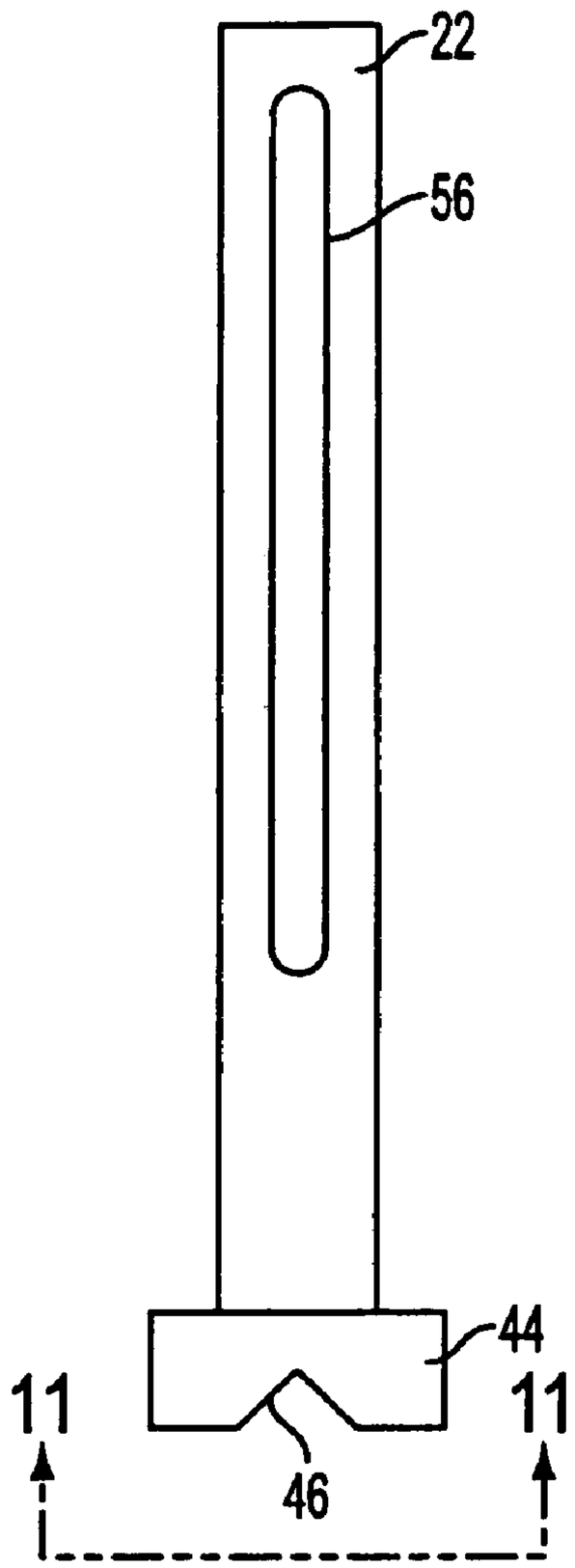

FIG. 9

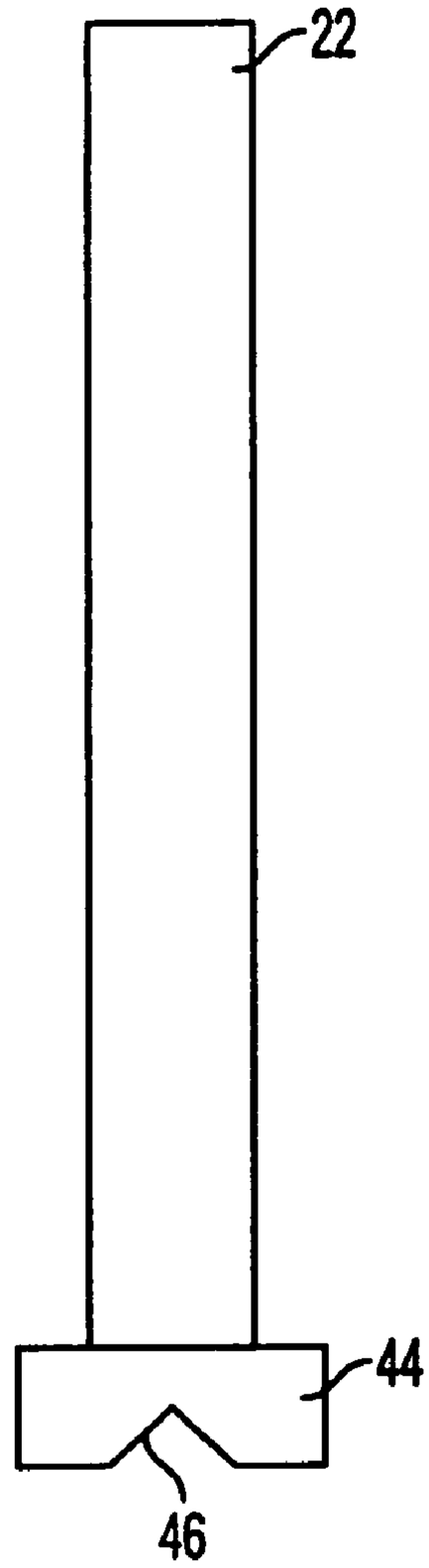

FIG. 10

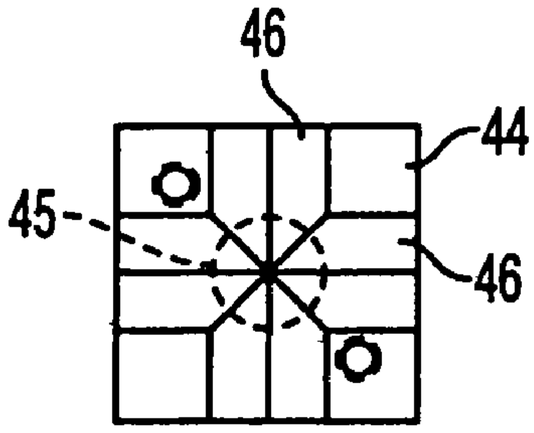

FIG. 11

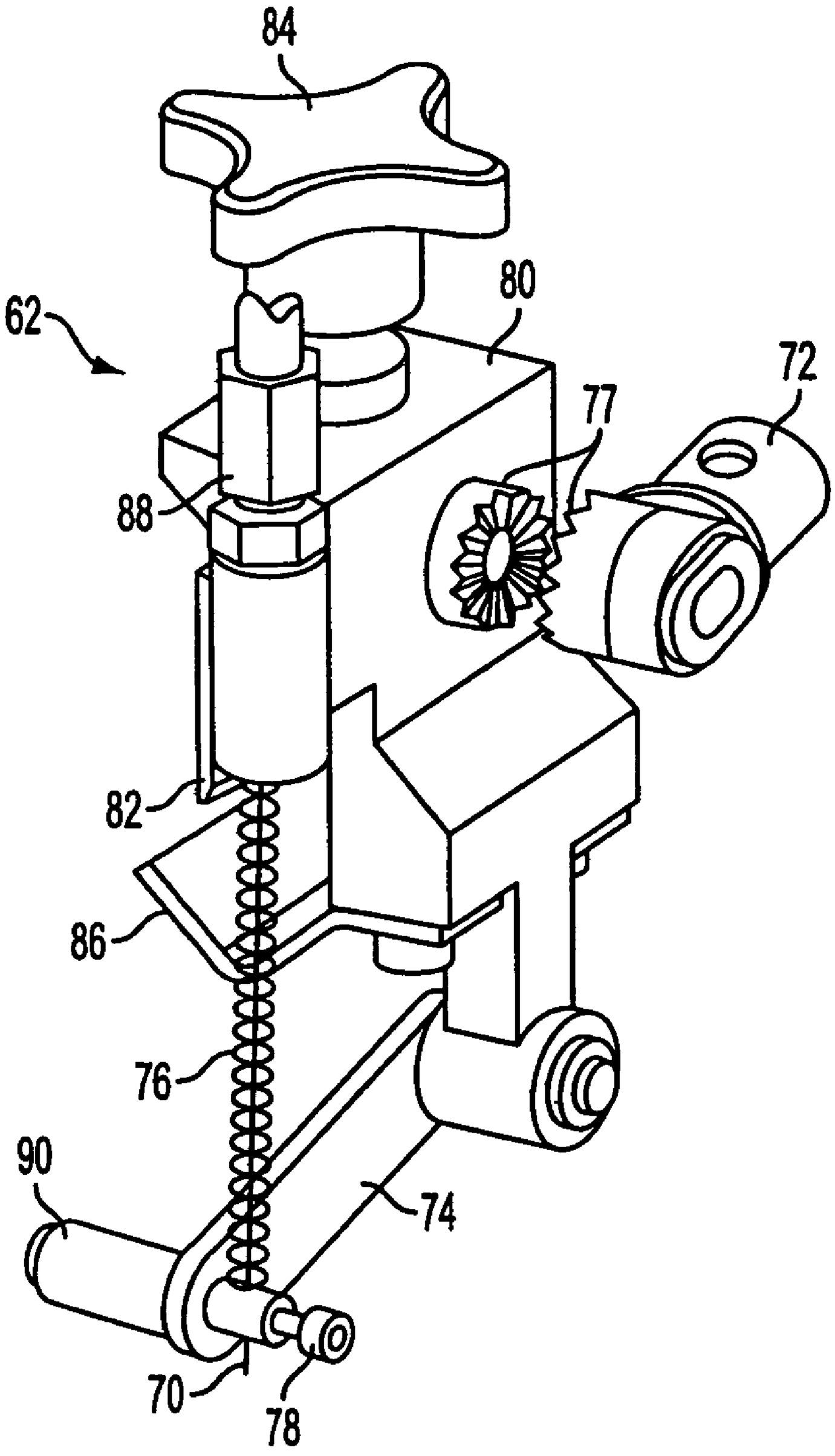

FIG. 12

ACCESSORY CART FOR STRIPING PAVEMENT AND OTHER SURFACES

CROSS REFERENCE TO RELATED APPLICATIONS

This application is the National Stage of International Application No. PCT/US2004/000489, filed Jan. 9, 2004, which claims the benefit under 35 U.S.C. 119 (a-e) of U.S. Provisional Application 60/439,934 filed Jan. 14, 2003, which is herein incorporated by reference.

FIELD OF THE INVENTION

The present invention relates generally to the field of painting apparatus. More particularly, this invention relates to accessory devices for conventional paint sprayers in the form of an easily transportable cart on which a paint spray gun may be mounted for converting a conventional airless paint sprayer into a line striper to paint lines on parking lots, curbs, warehouse floors, and other pavement surfaces.

BACKGROUND OF THE INVENTION

Devices exist for painting lines on pavement surfaces in parking lots and other locations where the line is sprayed onto the pavement by a paint spray gun. Conventional line stripers are not without their limitations, however, especially with respect to their reduced maneuverability in tight spaces, such as between vehicles that are parked in a parking lot. In particular, conventional line stripers are too big and too awkward to be able to spray lines between parked cars, for example. Another drawback with conventional line stripers is their inappropriateness to be used indoors to stripe warehouse floors, for example, due to the fact that a line striper is typically powered by a gasoline engine.

Furthermore, not everyone can afford a line striper, especially when the need for one might only be an occasional event hardly worth the cost of owning one. And there are those occasions when the striping job is too small to justify the effort necessary to bring a conventional line striper to the job site.

In view of the prior art the need exists for a lightweight cart onto which a spray gun may be quickly and easily mounted for surface line marking.

SUMMARY OF THE INVENTION

The present invention is a line striper cart having a J-shaped frame member formed of a longitudinal section and first and second transverse sections, with a plurality of wheels mounted on the frame member. The line striper cart of the present invention also includes a spray gun holder that provides a means positionable along the frame member for attaching a spray gun to the cart; and the cart further includes a spray gun extender or pole with a remote gun-operating handle that also provides a means for moving the cart by hand.

OBJECTS OF THE INVENTION

It is therefore an object of this invention to provide a cart that can be used as an accessory device for converting an airless paint sprayer into a line striper for use on small striping jobs to paint lines on parking lots, curbs, warehouse floors and other pavement surfaces.

It is also an object of this invention to provide a paint striping cart that can be easily maneuvered in tight spaces and moved with little effort from one line to the next.

Another object yet of this invention is to provide a paint striping cart that can be converted from a 3-wheeled device to a 2-wheeled device for painting curved lines.

Still another object of this invention is to provide a paint striping cart that is adaptable for removable mounting of a spray gun virtually anywhere on the cart for different striping applications.

It is also an object of this invention to provide a paint striping cart that is adaptable for adjustable positioning of a spray gun at a desired location on the cart to optimize the spray pattern in a particular application.

An additional object of this invention is to provide a paint striping cart that is relatively simple, sturdy and inexpensive, and which is easy to assemble and use.

These and other objects and advantages of the invention will become apparent from the following description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded view in perspective of the present invention.

FIG. **2** is a view in perspective showing the present invention generally oriented for use by a right-handed operator.

FIG. **3** is a view in perspective showing the present invention generally oriented for use by a left-handed operator.

FIG. **4** is an plan view of the present invention showing an orientation suitable for painting crosswalks.

FIG. **5** is a fragmentary view in perspective of the present invention showing an arrangement suitable for painting a curb.

FIG. **6** is a view in perspective of the present invention showing an arrangement suitable for painting curves and circles.

FIG. **7** is an elevation view of the present invention shown in FIG. **6**.

FIG. **8** is a view in perspective of the present invention.

FIG. **9** is a first side elevation view of a support post useful in the practice of the present invention.

FIG. **10** is a second side elevation view of the support post of FIG. **9**.

FIG. **11** is a plan view of the support post taken in the direction of arrows **11-11** of FIG. **9**.

FIG. **12** is a partially exploded view in perspective of a spray gun holder useful in the practice of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The following detailed description is of the best mode or modes of the invention presently contemplated. Such description is not intended to be understood in a limiting sense, but to be an example of the invention presented solely for illustration thereof, and by reference to which in connection with the following description and the accompanying drawings one skilled in the art may be advised of the advantages and construction of the invention. In the various views of the drawings, like reference characters designate like or similar parts.

Referring to the figures, the present invention is directed to a cart **18** including a rigid skeletal frame member **20**

providing a track-like surface on which support post **22** may be attached. The frame member **20** comprises a longitudinal section **24**, a first transverse section **26** and a second transverse section **28** together providing a structure having a shape as the letter J.

Preferably, frame member **20** is formed of one half-inch cold rolled steel rod, however, any material of sufficient strength and rigidity may be used in this invention. The stock may be formed in a conventional manner by any of various methods. The stock may also take the shape of different forms, besides round cross-section, and may be solid or tubular provided the selection allows for variable positioning of the support post **22** along the frame member **20**. A frame formed of round stock, either rod or tubing, is preferred because it then also may serve as an axle for each wheel. Other shapes of stock material will require additional, more costly, manufacturing steps to form the axles.

Preferably, the first transverse section **26** is formed by making a right angle bend **30** in the longitudinal section **24** at a desired distance from one end thereof. Then the second transverse section **28** is welded preferably perpendicular to the longitudinal section **24** at its other end in a manner ensuring that the entire structure lays flat. Longitudinal section **24** and second transverse section **28** are welded together at a point where end **32** of second transverse section **28** is aligned with end **34** of the first transverse section **26**.

There is a pair of wheels **36** rotatably attached to the second transverse section **28** and a single wheel **36** rotatably attached to the first transverse section **26**. The ends of the transverse sections are adapted to provide support axles on which the wheels **36** are mounted. Referring to FIG. **1**, there is a pair of crimps **38** formed at each end of the transverse sections to provide stops for preventing inward axial movement of the wheels **36**. A washer **40** may be used to serve as a bearing surface against which the hub **37** of wheel **36** slides during rotation. End caps **42** are attached to the exposed ends of the transverse sections to keep the wheels **36** from falling off.

Referring now also to FIGS. **9**, **10** and **11**, preferably a plate or base **44** is welded to the support post **22** to provide a means for attaching the support post **22** to the frame member **20**. The underside surface of plate **44** has two intersecting grooves **46** extending across the bottom of plate **44** to opposite ends of the plate to permit the support post **22** to be mounted in various locations and orientations to be described later. V-shaped grooves are preferred because of the relative ease in machining them. They also permit the support post **22** to self-align with the round stock material of frame member **20** and thus compensate for any manufacturing tolerances. In addition, making adjustments like placing the support post **22** at an angle with respect to a vertical axis in order to compensate for a special painting situation may be accomplished easily through the relative interaction between round stock material and V-shaped groove **46**.

The support post **22** is removably attached to the frame member **20** with a plate **48** secured with a pair of releasable fasteners **50** (only one of which is shown). Plate **48**, together with base **44** and fasteners **50** form a clamp **51**. Preferably, the plate **48** extends diagonally across base **44** to increase the amount of surface contact between clamp **51** and frame member **20** for increased holding power. It will be apparent that the support post **22** may be positioned virtually anywhere on a straight portion of the frame member **20**. The support post **22** may also be positioned directly over the point of attachment of longitudinal section **24** and the transverse section **28**, in which case it is preferable to include an appropriately sized hole **45** (FIG. **11**) in the underside surface of base **44** at the intersection of grooves **46** to provide clearance for a weld bead which may project from the frame at the junction of sections **24** and **28**.

There is a slot **56** in support post **22** to which a conventional airless spray gun **58** may be attached to the frame member **20** with means for adjusting the distance desired between the spray gun **58** and the surface to be painted. A spray gun extender **60** may be used to mount the spray gun **58** to the support post **22**. The spray gun extender **60** includes a remote trigger that attaches to the spray gun trigger and a handle for moving the cart by hand. Spray gun extender **60** is similar to an Outrigger gun pole, Product No. 757-920, available from Titan Tool, Inc., Oakland, N.J. Spray gun extender **60** generally differs from the Outrigger gun pole in that extender **60** utilizes a shorter two-piece pole and a different fastener adapted for mounting the extender to support post **22**. Spray gun extender **60** typically includes a spray gun holder **62**, top and bottom pole sections **64** and **66**, a control lever **68**, and a control cable **70**. An adjustable joint **72** having mating grooved faces **77** (see FIG. **12**) on the spray gun holder **62** allows a wide range of pivotable adjustments of spray gun **58** about a horizontal axis. Control cable **70** runs from the control lever **68** along or inside the pole sections **64** and **66** to a lever **74** pivotably mounted on the holder **62** for operating the spray gun **58**. When the spray gun **58** is mounted in the spray gun holder **62**, spray gun trigger **59** engages lever **74**. When the control lever **68** is pulled, control cable **70** transfers that movement to lever **74**, which in turn pulls the spray gun trigger **59** to begin spraying. Upon release of control lever **68**, a return spring **76** allows the paint valve in the spray gun **58** to close, by releasing the trigger **59** of the spray gun **58**. A fastener **78** attaches the end of the control cable **70** to the gun mount lever **74**.

With reference to FIG. **12**, spray gun holder **62** includes a main body **80**, a clamping block **82**, a clamping knob **84**, a gun support bracket **86** and a cable adjuster **88**. Initial setup includes placing the spray gun **58** into the gun support bracket **86** so that the spray gun trigger **59** rests on a bushing **90**. Knob **84** is then tightened until it comes to rest firmly against a handle of the spray gun **58**. The gun holder **62** is then attached to the support post **22** with a winged knob **92** (see FIG. **8**). The spray gun position is adjustable by loosening knob **92** and rotating the adjustable joint **72** or moving the gun and gun holder in slot **56** of the support post **22** to the desired position.

It is to be understood that in the practice of the present invention, a pump (also not shown) acting as the external source of paint is located away from and is not mounted on the cart **18**. Mounting only the gun **58** and not the pump on the cart maintains the small size and maneuverability of the cart over prior art line stripers having the pump (and necessarily the prime mover for the pump, such as an internal combustion engine or electric motor) located on the cart. A flexible paint hose **94** provides a conduit for transferring paint from an external source (not shown) to the spray gun **58**.

In operation, an operator uses the spray gun extender **60** as a handle to manually propel the cart **18** by pushing or pulling in the desired direction and at the same time actuating the control lever **68** to begin spraying a line on the pavement. The operator may use the longitudinal section **24** of the frame member **20** for line-up with a reference marker, such as a chalk line drawn on the surface or an existing line that is to be repainted, when striping long lines.

FIG. **2** shows the present invention in an orientation that is generally preferred by a right-handed operator. FIG. **3**

shows a preferred setup for a left-handed operator. This of course is a matter of personal preference and in either case it merely requires flipping the cart over and reattaching the support post **22**, spray gun extender **60** and spray gun **58**.

FIG. **4** shows the present invention in an orientation making the unit most suitable for painting angled lines such as in crosswalks. Placing the single wheel in front allows the spray gun to be brought close to a curb **75**.

FIG. **5** is another view of the present invention and shows a preferred arrangement for painting a curb. In this orientation, the support post **22** may be rotated ninety degrees, as permitted by the intersecting grooves **46**, to a position that places the spray gun **58** perpendicular to the path of travel of cart **18**. This allows the operator to face the painted surface directly for better control. Making adjustments like placing the support post **22** at a desired angle with respect to the vertical axis, adjusting the gun holder **62** in slot **56**, and setting the adjustable joint **72** as may be necessary will allow the operator to spray both a vertical surface **71** and a horizontal surface **73** of a standard curb **75** at the same time.

FIGS. **6** and **7** show yet another arrangement of the present invention and its versatility wherein it may be converted from a 3-wheel cart to a 2-wheel cart for spraying curved lines and circles. In this configuration, the cart **18** is rotated onto the wheels **36** that are supported by the second transverse section **28** once the support post **22** has been repositioned for this orientation.

Although not shown in the drawings, it will be readily understood that owing to its lightweight construction, the cart can be easily lifted over a line once painted and placed in position to paint another line without the need to back it off the line, or run over the recently painted line with one of the wheels. The handle on pole **64** can also be used to rotate the cart onto the two in-line wheels, thus allowing the cart to be wheeled away from the recently painted line until the free wheel clears it and then the cart may be placed back on the ground.

When it is desired to use the spray gun **58** for other purposes, it can be disengaged from the gun holder **62** for hand spraying.

While the present invention has been described at some length and with some particularity with respect to the several described embodiments, it is not intended that it should be limited to any such particulars or embodiments or any particular embodiment, but it is to be construed with references to the appended claims so as to provide the broadest possible interpretation of such claims in view of the prior art and, therefore, to effectively encompass the intended scope of the invention. Furthermore, the foregoing describes the invention in terms of embodiments foreseen by the inventor for which an enabling description was available, notwithstanding that insubstantial modifications of the invention, not presently foreseen, may nonetheless represent equivalents thereto.

We claim:

1. A line striper cart comprising: a) a J-shaped frame member having a longitudinal section with first and second ends, and first and second transverse sections connected to said longitudinal section at the first and second ends thereof, respectively, such that the first and second transverse sections are parallel to each other; b) a plurality of wheels mounted on said frame member, c) means for attaching a spray gun to the cart, said attachment means being adjustably positionable along said frame member, and d) means for moving the cart by hand, wherein the plurality of wheels includes a pair of laterally spaced wheels at one end of said frame member and a single wheel at the other end of said frame member for three-wheeled operation of the cart, and wherein said J-shaped frame member is adjustable such that said single wheel is positionable off the ground relative to the pair of laterally spaced wheels for two-wheeled operation of the cart.

2. The line striper cart of claim **1**, wherein said first transverse section is secured at one of its ends to the first end of said longitudinal section and said second transverse section is secured intermediate its ends to the second end of said longitudinal section.

3. The line striper cart of claim **1**, wherein the plurality of wheels includes a pair of laterally spaced wheels at one end of said frame member and a single wheel at the other end of said frame member and wherein said single wheel is positioned in-line with one of said laterally spaced wheels.

4. The liner striper cart of claim **1**, wherein the means for attaching a spray gun comprises a spray gun holder.

5. The line striper cart of claim **1**, characterized by the absence of a pump mounted on the cart.

6. The line striper cart of claim **1**, wherein the means for moving the cart by hand comprises a spray gun extender.

7. The line striper cart of claim **6**, wherein the spray gun extender further comprises a handle.

8. The line striper cart of claim **1**, wherein the transition from three-wheeled operation to two-wheeled operation is effected through a re-positioning of the attachment means.

9. The line striper cart of claim **1**, wherein the attachment means is positioned on a transverse section intermediate said pair of laterally spaced wheels during two-wheeled operation of the cart.

10. The line striper cart of claim **1**, wherein the attachment means is adjustably positionable on and self-centering relative to the frame member via a clamp member having intersecting v-shaped recesses.

11. The line striper cart of claim **1**, wherein the attachment means further comprises a support post having an elongated slot extending along the longitudinal axis of the support post for adjustable attachment of a spray gun to the cart.

12. The line striper cart of claim **11**, further comprising a spray gun holder attached to the support post via the elongated slot, said spray gun holder being slidably and angularly repositionable within said elongated slot.

13. The line striper cart of claim **1**, wherein said moving means further comprises a length-adjustable pole having a control means for operating a spray gun attached to the cart.

14. The line striper cart of claim **13**, wherein said pole further comprises a handle and said control means further comprises a control lever incorporated into said handle.

15. The line striper cart of claim **14**, further comprising a spray gun holder attached to said attachment means and a control cable extending between said control lever and said spray gun holder for remote control of said spray gun holder from said handle.

16. A line striping apparatus comprising: a) a frame member generally having a J-shape, said frame member including a longitudinal section, a first transverse section forming a right angle to said longitudinal section at a first end thereof, and a second transverse section forming a right angle to said longitudinal at a second end thereof, b) a plurality of wheels rotatably mounted on said frame member, c) means for adjustably mounting a spray gun on said frame member, said mounting means being selectively positionable along the length of said frame member; c) means for supplying paint to said spray gun; and d) means for moving said frame member by hand, wherein the plurality of wheels includes a pair of laterally spaced wheels at one end of said frame member and a single wheel at the other end of said

frame member for three-wheeled operation of the line striping apparatus, and wherein said frame member is adjustable such that said single wheel is positionable off the ground relative to the pair of laterally spaced wheels for two-wheeled operation of the line striping apparatus.

17. The line striping apparatus of claim **16**, wherein the plurality of wheels includes a pair of laterally spaced wheels at one end of said frame member and a single wheel at the other end of said frame member and wherein said single wheel is positioned in-line with one of said laterally spaced wheels.

18. The line striping apparatus of claim **16**, wherein the means for moving the frame member by hand comprises a spray gun extender.

19. The line striping apparatus of claim **18**, wherein the spray gun extender further comprises a handle.

20. The line striping apparatus of claim **16**, wherein the transition from three-wheeled operation to two-wheeled operation is effected through a re-positioning of the mounting means.

21. The line striping apparatus of claim **16**, wherein the mounting means is positioned on a transverse section intermediate said pair of laterally spaced wheels during two-wheeled operation of the line striping apparatus.

22. The line striping apparatus of claim **16**, wherein the mounting means is adjustably positionable on and self-centering relative to the frame member via a clamp member having intersecting v-shaped recesses.

23. The line striping apparatus of claim **16**, wherein the mounting means further comprises a support post having an elongated slot extending along the longitudinal axis of the support post for adjustable attachment of a spray gun to the line striping apparatus.

24. The line striping apparatus of claim **16**, further comprising a spray gun holder attached to the support post via the elongated slot, said spray gun holder being slidably and angularly repositionable within said elongated slot.

25. The line striping apparatus of claim **16**, wherein said moving means further comprises a length-adjustable pole having a control means for operating a spray gun attached to the line striping apparatus.

26. The line striping apparatus of claim **25**, wherein said pole further comprises a handle and said control means further comprises a control lever incorporated into said handle.

27. The line striping apparatus of claim **26**, further comprising a spray gun holder attached to said attachment means and a control cable extending between said control lever and said spray gun holder for remote control of said spray gun holder from said handle.

28. The line striping apparatus of claim **16**, wherein the supplying means further comprises a flexible hose attachable between a paint supply and said spray gun holder.

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